Paper No. 30

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte RYUSUKE USHIKOSHI, HIDEYOSHI TSURUTA,
and TOMOYUKI FUJII

_____

Appeal No. 2002-0544
Application No. 09/095,157[1]

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HEARD: February 19, 2003

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Before GROSS, LEVY, and SAADAT, Administrative Patent Judges.

SAADAT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the Examiner's final rejection of claims 1-5 and 14. Claims 6-13 have been canceled.

We reverse.

[1] Application for patent filed June 10, 1998, which claims the foreign filing priority benefit under 35 U.S.C. § 119 of Japanese Application No. 9-164582, filed June 20, 1997.

BACKGROUND

Appellants' invention is directed to a ceramic joint structure for an electrostatic chuck used in semiconductor wafer processing. The ceramic joint structure reduces corrosion of a metal member which is joined to a ceramic member even if the structure is exposed to air at a high temperature during wafer processing (specification, page 3). The embedded member includes at least molybdenum whereas the joint layer is made of more than 50% by weight of one or more metals from the group consisting of gold, platinum and palladium (specification, page 7).

Representative independent claim 1 is reproduced as follows:

> 1. A ceramics joint structure in which a ceramics member having an oxidation resistance property and a metal member are joined via a joint layer, comprising a structure such that:
>
> (1) an embedded member made of a metal including at least molybdenum is embedded in said ceramics member;
>
> (2) a part of said embedded member is exposed to a joint surface of said ceramics member to form a metal exposing portion which is contacted with said joint layer;
>
> (3) said ceramics member and said metal exposing portion are joined via said joint layer to said metal member respectively; and
>
> (4) said joint layer comprises more than 50% by weight with respect to all the metal in the joint layer of at least one metal selected from the group consisting of gold and palladium.

The prior art references of record relied upon by the Examiner in rejecting the appealed claims are:

Fujii et al. (Fujii) EP 0726239 A2 Aug. 14, 1996 (European Application)

Gessner G. Hawley (Hawley), "Condensed Chemical Dictionary," Tenth Edition, 1981, page 506.

Claims 1-5 and 14 stand rejected under 35 U.S.C. § 103 as being unpatentable over Fujii in view of Hawley.

Rather than reiterate the viewpoints of the Examiner and Appellants regarding the above-noted rejections, we make reference to the answer (Paper No. 24, mailed May 7, 2001) for the Examiner's reasoning, and to the brief (Paper No. 23, filed March 9, 2001) and the reply brief (Paper No. 25, filed July 9, 2001) for Appellants' arguments thereagainst.

OPINION

Appellants acknowledge that Fujii describes a joined ceramic structure including a brazing material which has any of copper, nickel and aluminum as its main component that joins the metallic and the ceramic members (brief, page 4). However, Appellants argue that although molybdenum is mentioned by Fujii as a possible metal for the metallic member, there is no discussion of any potential problems that need to be overcome (brief, page 5). Appellants point out that the mere fact that gold is a non-

corrosive metal does not support obviousness as it fails to provide sufficient reason for one skilled in the art to substitute gold for the brazing material of Fujii (brief, pages 6 & 7).

In response to Appellants' arguments, the Examiner asserts that gold is a well known brazing material that does not corrode in air (answer, page 6). The Examiner further points out that Fujii indicates desirability of corrosion resistance and strength in the joint (page 9, lines 20-21) and concludes that "one of ordinary skill in the art would use gold as the main component for the joint layer of Fujii []" (id.).

In rejecting claims under 35 U.S.C. § 103, the Examiner bears the initial burden of presenting a prima facie case of obviousness. See In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). The court further reasons in Karsten Mfg. Corp. v. Cleveland Gulf Co., 242 F.3d 1376, 1385, 58 USPQ2d 1286, 1293 (Fed. Cir. 2001) that for an invention to be obvious in view of a combination of references, there must be some suggestion, motivation, or teaching in the prior art that would have led a person of ordinary skill in the art to select the references and combine them in the way that would produce the claimed invention. However, "the Board must not only assure that

the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion." In re Lee, 277 F.3d 1338, 1344, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002).

Turning to Fujii, as conceded by Appellants, we find that the reference discloses a joined ceramic structure including a brazing material made of a metal selected from the group consisting of copper, aluminum and nickel (page 4, lines 15-17). Fujii further teaches that the metallic member embedded in the ceramic member is made of a metal selected from the group consisting of molybdenum, tungsten or their alloy (page 4, lines 23-25). However, the Examiner has not pointed to any part of Fujii that identifies any problems associated with using molybdenum that would suggest the desirability modification of the composition of the disclosed brazing material, nor do we find such teachings in the reference. Fujii, in fact, as recognized by the Examiner (answer, page 6), refers to the disclosed brazing material as having "sufficient joining strength in a satisfactory corrosion-resistant state" (page 9, lines 20-21).

Although we acknowledge that Hawley identifies gold as a metal that does not corrode in air and is used as electrical contact alloys and brazing alloys, we do not find any teachings

or suggestion in the prior art that supports the obviousness of using gold, and no other metal, in the joint layer of Fujii. Therefore, we disagree with the Examiner that, because gold is a non-corrosive metal used in electrical contacts, one of ordinary skill in the art would have substituted a gold for the brazing material in the joint layer of Fujii. The Examiner has further failed to establish why the joining layer of Fujii, which is formed of a brazing material exhibiting good quality, would benefit from gold. Similarly, the chemical and electrical properties of gold, as disclosed by Hawley, neither teach nor suggest using gold, instead of copper, aluminum or nickel, in a brazing material that shows "sufficient joining strength in a satisfactory corrosion-resistant state."

Based on our analysis above, we find that the Examiner has failed to set forth a prima facie case of obviousness because the necessary teachings and suggestions for using gold in the brazing material of Fujii are not shown. Accordingly, we do not sustain the rejection of claims 1-5 and 14 under 35 U.S.C. § 103 over Fujii in view of Hawley.

CONCLUSION

In view of the foregoing, the decision of the Examiner to reject claims 1-5 and 14 under 35 U.S.C. § 103 is reversed.

REVERSED

ANITA PELLMAN GROSS Administrative Patent Judge	)	
STUART S. LEVY Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
MAHSHID D. SAADAT Administrative Patent Judge	)	

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